

TOP SECRET

TICOM/M-1

VIERLING'S LABORATORY AT EBERMANNSTADT.

This publication contains a note by Cdr. Bacon and a teleprint from Col. Bicher on the course being pursued by TICOM with respect to Dr. Vierling's communication research laboratory at Ebermannstadt. Also included herein is the preliminary report on this target prepared by Major Heller.

TICOM
21 June 1945

No. of Pages 4

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TOP SECRETVIERLING'S LABORATORY AT EBERMANNSTADT

Major Heller has returned to U.K. and reported fully on this problem. After meetings with Mr. Hinsley and Colonel Wallace, it has been decided that;

- 1) Major Heller will produce a preliminary report for Colonel Wallace to put up to the Chief.

It has been suggested that the laboratory must be frozen at once from any outside interference and exploited in situ by various experts from outside G.C. & C.S.

- 2) Major Heller will then produce a full technical report in London, and supply copies for TICOM and Colonel Wallace.
- 3) Commander Bacon will telephone Colonel Johnson, requesting that Colonel Bicher will take all possible steps to freeze the target immediately and to protect Vierling, who is a very sick man.

It is to be pointed out in this request that we are making no contacts outside G.C. & C.S. until the Chief's authority has been given. In the meantime, Colonel Bicher to be advised that the target should be treated as a Sigint Target of great potential value.

ALLON BACON,
Commander, R.N.V.R.

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Following message received via Lt.Col. Johnson from Colonel Bicher at 1430/21/6:

T.O.O. 21 June 1345B:

Preliminary report from Barlow on matter which Heller reported to B.P. indicates this target of primary importance. Am sending command channel cable requesting this laboratory be frozen for TICOM exploitation.

Am requesting experts be dispatched from Washington to exploit laboratory in conjunction with TICOM.

Would like to discuss this exploitation with TICOM upon my arrival in U.K.

[Note: Colonel Bicher is expected to arrive in U.K. on Friday, June 22nd]

LABORATORY FEUERSTEIN

Location: EBERMANNSTADT (Fraenkische Schweiz)

Director: Dr. Oscar VIERLING.

1. This installation was visited between 14th and 17th June by Major Barlow, S.I.D. ETOUSA and Major Heller, Sigint, SHAEF. The evacuation location of this laboratory, St. Martin, near Lofer (Austria) likewise visited, was closed down, all laboratory equipment being transported back to Ebermannstadt. Undesirable elements of this laboratory were arrested (i.e. S.S. and "wanted persons").

2. Following is a brief resumé of the most important work in process of development at this laboratory:

- (a) A speech scrambling device "Baustein", giving very efficient internal security. It is based on a principle of voice controlled inversion with addition of noise.
- (b) Quartz synchronisation gear giving an accuracy of 10^{-7} seconds, intended for synchronisation of cypher teleprinter equipment and avoiding all causes of failure through fading and atmospheric disturbances of the wireless link.
- (c) Improved cypher teleprinter embodying 15 wheels and improved cypher progression. This device is designed to avoid key repetition before 36 hours continuous running. (b) and (c) together form one project, the synchronisation gear being particularly suitable for keeping the two cypher settings in perfect step.
- (d) Synthetic speech scrambler: this device, based partly on previous work by the Bell laboratories on synthetic speech, embodies an entirely new system of scrambling termed "triple wobblating". This form of scrambling is controlled by the cypher mechanism of the secret telewriter referred to above. When completed this device should give 100% secure speech over a period of several months. Owing to technical reasons it can, however, be broken eventually and for this reason project (e) will be substituted for the synthetic speech generator.
- (e) Speech teleprinter: This utopian dream appears to have been made reality. This laboratory has developed a method whereby speech can be recorded either as a printed text or as a series of teleprinter-like impulses. Work at present has been limited, owing to war conditions, to printing of vowel sounds. No difficulty whatsoever is expected over consonant sounds. This device, replacing the synthetic speech generator, will result in complete encypherment of speech. The implications and applications of this are immeasurable.

4.

Where manual calculation requires 14-21 days to solve any single equation, this machine achieves the same in approximately one quarter second. The machine at present is complete except for a few minor adjustments.

- (g) In addition, some 10 other projects have been completed and put into operation. All involve new application of improved principles. Essential to all this laboratory's work is the remarkable improvement in filter design. Certain of the projects were worked on to solve the complications inherent in interception of speech and scrambled speech.

3. The laboratory is completely self-supporting having incorporated in it a machine shop capable of undertaking all forms of metal work. All material, with the exception of valves, is locally produced. We were informed that the laboratory has sufficient material on hand for one year's full research. The laboratory is staffed with some 20 highly skilled high frequency research scientists, all of whom may be classed as 100% cooperative. The Director of this laboratory made use of the evacuation order to rid his laboratory of all "undesirable elements".

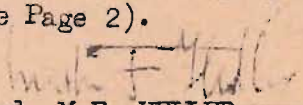
4. The problem of exploitation of this target is rendered extremely complicated by:

- (a) the security problems inherent in this type of material; and
(b) the manifold and highly technical interests involved - e.g. G.P.O., National Physical Laboratory, Radio Industry, and all Service Ministries, including Ministry of Supply and M.A.P.

5. In order to obtain full benefits from the investigation of this laboratory it will be necessary for a team of highly competent scientific investigators completely briefed in the work and background of this laboratory to spend at least 6-8 weeks continuous time on the target. It would not be practical to transport the laboratory and/or personnel to U.K.; to separate personnel from laboratory would likewise be unsatisfactory.

6. Before full exploitation of this target, time would be necessary to "recondition" the laboratory. This is due to the fact that much equipment was dismantled and hidden to prevent destruction by German Army authorities, and to the evacuation and return of much completed equipment. Such reconstruction would require the presence of a technician with fluent German, familiar with the background and allied requirements.

7. A preliminary verbal report has been made by the undersigned to G.C. & C.S. (see Appendix). A full technical report is in course of preparation. Steps are being taken to safeguard this target (see Page 2).

Signed 
M.F. HELLER
Major G.S.I.(s)
G-2 SHAEF.